

—is made by M. Asselot by mixing a solution of one part of celluloid in ten of acetone with a solution of two parts of magnesium chloride in six of alcohol. When the paste is dried an unflammable celluloid remains.

A laboratory for the study of cave animals has been established in some subterranean passages lately found under the Jardin des Plantes, Paris.

It was about twenty years ago—in 1877 or 1878—that astronomers were startled by the sudden appearance in the equatorial belts of Jupiter of a marking of such unusual size and depth of color that it has been known since as the Great Red Spot. Though remarkably persistent this spot has not been seen lately, its place showing a very light color. A recent discussion by the British Astronomical Association reveals a tendency to regard this spot, however, as a permanent feature of the planet's solid surface—a kind of Sahara desert or dry region, one astronomer contended, surrounded by a cloudy region, while another supposed it to be an elevated portion of the body of the planet. Observations by Cassini indicate that the spot had been seen two centuries ago, although no mention was made of its color. Some fifteen or eighteen years ago the whole equatorial region of Jupiter was of an orange color, with no white portions in it, though previously it had been nearly white for some years, and this tends to confirm the idea that the unclouded planet is of warmish hues of varying depth.

The singular action of certain metals and other substances on photographic plates has been described to the Royal Society by Mr. W. J. Russell. Not only do uranium salts and oxides act slowly on sensitive plates in the dark, but the property is shared by metallic zinc, cadmium and magnesium, as well as by copal, strawboard, wood, some kinds of paper, and other substances. The action was at first thought to depend on contact, then it was supposed feeble emanations might be given off. Neither supposition proves to be true, however, for zinc acts equally well when not in contact with the plate, and even when varnished.

After a trial of two years, Dr. I. A. Bridges reports that the best treatment for sprains known to him is the application of electricity once a day for five to seven days, with massage for five minutes twice a day.

The venom of bees—claimed to be a remedy for cancer, snakebite, and other ills—is now regularly collected by two young pharmacists. The bees are held singly by the abdomen in a small glass tube or enraged together in a bottle until the tiny drops of poison are discharged.

Some interesting experiments on the effects of weather on plants are given in a little work by Mr. John Clayton, an English naturalist. Twelve bean-plants were placed in the ground so that one-half of them would receive all the sunshine of the day while the others remained continuously in the shade, and the crop of beans grown in the sunshine weighed three times that produced in the shade. The experiment was continued in succeeding years. All seeds

were planted under the conditions of the preceding year the differences between the two classes of plants progressively increasing until in the fourth year the plants of exclusively shade-grown ancestors flowered but failed to mature fruit measurements of the contraction of trees in winter were also made. The girth of sycamore trunks were from two to three sixteenths of an inch, and of oaks from five to six sixteenths of an inch, less in February at a temperature of 3° Fahr. than in October, after growth had ceased, and the trunks had expanded to their original size on March 2, at a temperature of 39°. The frequent splitting of forest trees is due to this contraction by cold.

An independent electric light plant for each car of a train has been adopted by more than twenty English railways. Each carriage is provided with a dynamo and storage battery, the former being driven from the axle and so arranged that it is at rest when the speed of the train is less than 20 kilometers (13 miles) an hour, the battery then supplying the current. One half or all the lamps can be switched on by the conductor. The weight for each car is 450 pounds, and the apparatus costs \$250,000.

A new method of exhibiting the features of the moon, devised by Professor William Hallock, consists in projecting views with an arc-light lantern upon a whitened hemisphere six or eight feet in diameter. Such representations, however, seem to lack the sharpness at the edges which can be given by stereoscopic views, which produce on a flat surface the effect of perfect rotundity.

The electric tramway at Lusanne, Switzerland, runs up the steepest incline surmounted by any train depending on adhesion to the rails—11 2 per cent in one place.

In a study of the possibilities of wind as a source of power, M. Maximilian Plesseur has reached the conclusion that the old windmill and the aeolian wheel are not suitable motors, but that this energy can best be utilized by means of vehicles driven by sails on circular railways, the sails to be kept trimmed automatically, and the power to be transmitted to an axle and thence to machinery. Where the wind is fairly constant, such an apparatus, especially if used to drive dynamos and charge electrical accumulators, should prove serviceable and economical. A similar arrangement could be established on water, boats being used instead of cars, and the power of—which considerable could be kept in reserve—could be transmitted to a distance.

On observing an explosion of 100 pounds of nitro-compound from a distance of 300 yards, Mr. E. J. Ryves lately saw what he supposes to have been the shadow of the sound wave start from the point of detonation and travel in the bright sunlight for at least half a mile down the valley. This led to camera experiments by Professor C. V. Boys, the result being a series of pictures by an cinematograph showing the wave as a complete circle instead of a semi-ellipse as it should be on the sound shadow theory. The "Ryves ring" is astonishingly back to the eye, though appearing as a circular light shading in

the photographs. What is the cause is still uncertain, but it is pointed out that the explanation given may be tested by noting whether the phenomenon appears when the sun is clouded.

Veneer cutting has reached such perfection that a single elephant's trunk 30 inches long is now cut in London into a sheet of ivory 150 inches long and 20 inches wide, and some sheets of rose wood and mahogany are only about a fiftieth of an inch thick.

An interesting review of the meteorology of London from 1713 to 1896 was given by Mr. R. C. Mossman at a late meeting of the Royal Meteorological Society. In this long period the average number of thunderstorms was 9.7 per annum, the maximum occurring in July and the minimum in February. The average number of fogs was 24.4 and of "dense" fogs 5.8, comparison of decades showing a steady and uninterrupted increase of fog since 1841. The average number of days with snow was 13.6 per annum. The snowiest winter was that of 1887-8, with 43 days; while in the winter of 1862-3 there was not a single fall of snow. The mean date of first snowfall was November 9, and of last snowfall March 30. Hail is essentially a spring phenomenon, reaching a maximum in March and April, the minimum being in July and August. The days with hail averaged 5.9 per annum.

A striking feature of modern science is the rapidity with which the possibilities offered by any new discovery are followed up. The Roentgen rays have been known but a year and a half, yet they have taken a permanent place in the hospitals of the world, vast improvements have been made in apparatus for producing them, and it is impossible to say that they will not soon become a necessity of our daily life. In England a Roentgen society has been formed, with Professor S. P. Thompson as president. Some of the members will study the sources of the rays, others the applications; some the induction coils, others the tubes and other apparatus. These systematic efforts can hardly fail to result in a speedy increase of the efficiency and applications of this epoch-making discovery.

Felt seems to antedate weaving. This material, Professor Beekman points out, is the principal substance of the clothing and even the habitations of the Tartars and other nations inhabiting middle and northern Asia, where manners and customs appear to have remained unchanged from the most remote antiquity.

At a recent conference of engineers in London, the advantage of nickel steel for ship-building were urged, and the necessity was pointed out of finding new deposits of nickel and reducing the cost of its metallurgy.

In his latest observations, just communicated to the Berlin academy, Prof. Roentgen finds that the X-rays emanate from the irradiated air in all directions, so that if they were visible, the appearance would be that of a room filled with smoke and lighted up by a candle. When a plate impervious to the rays is placed in front of a fluorescent screen, the barium platino-cyanide still remains luminous, but the fluorescence disap-